

# Wildlife Survey Protocols



Wyoming High Plains District - Newcastle Field Office

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## ■ Survey Protocols

### ● Bald Eagle

#### BALD EAGLE WINTER ROOST SITES

##### **Recommended protocol based on peer reviewed publications.**

1. Survey stands of coniferous and cottonwood trees during the period of Dec.1 to March 1 from 1 hour before sunrise or sunset to 1 hour after sunrise or sunset. Surveys after this period are not reliable. Late afternoon surveys may be preferable as eagles often leave roost sites at or before dawn and may return to roost throughout the afternoon.
2. Helicopters or fixed-wing airplanes can be used for surveys. If not following a drainage, suspected roost habitat should be flown on north - south transects with lines about one km (.6 mi) apart. Under conditions of marginal light, transect width should be narrowed. Transects should be flown at about 100-150 meters (300-450 ft) above ground level. Whenever possible, two observers should be used in addition to the pilot so that one observer is always looking away from the sun regardless of the direction the aircraft is flying. Surveys should begin at the east edge of the survey area and work west to minimize the possibility of the plane flying over roost sites prior to them being observed.
3. Document all bald eagle observations using GPS equipment (UTMs - NAD83). Record: date, location, number seen, age class (adult, juvenile, unknown eagle) and habitat
4. Survey will consist of at least 3 visits, with at least 1 week between visits. Visits should extend throughout the winter roosting season (recommended minimum of 1 visit per month), as eagle use is largely dependent on regional weather patterns, and eagle use often increases as the roosting season progresses. APD analysis shall proceed with the completion of 3 visits so as not to delay APD analysis for the entire three month survey period.

- **Sage-grouse/Sharp-tailed grouse**

**Surveys for New Leks:**

1. Searches should be conducted from early April to early May (April 1 – May 7). (Survey season corresponds to peak male attendance as established by the WGFD for documenting population trends.)
2. Surveys for new leks should be conducted a minimum of three (3) times (with subsequent surveys 7-10 days apart).
3. Surveys for new leks should be conducted throughout suitable habitat.
4. Surveys to confirm the activity of a lek may require only one visit if grouse are identified on the lek.
  - **NOTE** To designate a known lek as inactive requires either an absence of birds on the lek during multiple ground visits under ideal conditions throughout the strutting season or a ground check of the exact lek site late in the strutting season that fails to find any sign (droppings/feathers) of strutting activity.
5. Surveys can be conducted from the ground or from an aircraft.
  - Lek surveys can be conducted from the **ground** by driving along roads in suspected or known breeding habitat and stopping every ½ mile to listen for sounds of breeding grouse. Ground searches can be conducted from an hour before to an hour after sunrise. In less accessible areas, searches can be made from a mountain bike, trail motorcycle, 4-wheel all terrain vehicle, horseback, or on foot. On a calm morning, breeding sage grouse may be heard at a distance of 1.5 km ( about 1 mi). All openings or areas of less dense sagebrush should be searched for breeding birds with binoculars or a spotting scope.
  - Helicopters or fixed-wing airplanes can be used for **aerial** surveys. Suspected breeding habitat should be flown on north - south transects with lines about one km (.6 mi) apart. Aerial searches are biased toward finding larger leks; small leks (<15 birds) are more difficult to detect. Calm, clear mornings are a prerequisite to aerial searches. Winds over 15 mph and more than scattered cloud cover should be sufficient to cancel search flights. Cocks can be observed from the air at distances greater than one km (0.6 mi) in early morning sun, but cloud cover greatly reduces observability. Under conditions of marginal light, transect width should be narrowed. High winds not only make traveling a straight transect difficult, but also affect strutting behavior. Fewer cocks will strut continuously, and flushing distance appears to be greater under windy conditions.

Transects should be flown at about 100-150 meters (300-450 ft) above ground level. Whenever possible, two observers should be used in addition to the pilot so that one observer is always looking away from the sun regardless of the direction the aircraft is flying. Surveys should begin at the east edge of the survey area and work west to minimize the possibility of the plane flying over leks prior to them being observed. Special attention should be paid to old lakebeds, stock-watering areas, and other relatively open sites largely surrounded by sagebrush with 15 to 25% canopy cover. Lek searches from an aircraft should be conducted from ½ hour before to one hour after sunrise.

6. If a new lek is identified, the location should be accurately determined and recorded in UTM's using NAD83 datum. It is advisable to record/map the perimeters of new leks. Surveyor(s) should **not** disturb grouse to GPS lek locations. If a lek is active, the surveyor(s) should make the best estimate of the lek location and return later to confirm.

#### **Wyoming Sage-Grouse Definitions:**

(Revised 12/16/09)

The following definitions have been adopted for the purposes of collecting and reporting sage-grouse data. See the sage-grouse chapter of the Wyoming Game and Fish Department's Handbook of Biological Techniques for additional technical details and methods.

**Lek** - A traditional courtship display area attended by male sage-grouse in or adjacent to sagebrush dominated habitat. A lek is designated based on observations of two or more male sage-grouse engaged in courtship displays. Before adding the suspected lek to the database, it must be confirmed by an additional observation made during the appropriate time of day, during the strutting season. Sign of strutting activity (tracks, droppings, feathers) can also be used to confirm a suspected lek. Sub-dominant males may display on itinerant (temporary) strutting areas during population peaks. Such areas usually fail to become established leks. Therefore, a site where small numbers of males (<5) are observed strutting should be confirmed active for two years before adding the site to the lek database.

**Satellite Lek** – A relatively small lek (usually less than 15 males) that develops within about 500 meters of a large lek during years of relatively high grouse numbers. Locations of satellite leks should be encompassed within lek perimeter boundaries. Birds counted on satellite leks should be added to those counted on the primary lek for reporting purposes.

**Lek Perimeter** – The outer perimeter of a lek and any associated satellites. Perimeters should be mapped by experienced observers using established protocols for all leks with larger leks receiving higher priority. Perimeters may vary over time as population levels or habitat and weather conditions change. However, changes to mapped perimeters should occur infrequently and only if grouse use consistently (2+ years) demonstrates the existing perimeter to be inaccurate. A point **within** the lek perimeter must be recorded or calculated as the identifying location for the lek. The point may be the geographic center of the perimeter polygon as calculated through a GIS exercise or a GPS point reflecting the center of breeding activity as typically witnessed on the lek.

**Lek Complex** - A lek or group of leks within 2.5 km (1.5 mi) of each other between which male sage-grouse may interchange from one day to the next.

**Lek Count** - A census technique that documents the actual number of male sage-grouse observed attending a lek complex. The following criteria are designed to assure counts are done consistently and accurately, enabling valid comparisons to be made among data sets. Additional technical criteria are available from the WGFD.

- Conduct lek counts at 7-10 day intervals over a 3-4 week period after the peak of mating activity. Although mating typically peaks in early April in Wyoming, the number of males counted on a lek is usually greatest in late April or early May when attendance by yearling males increases.
- Conduct lek counts only from the ground. Aerial counts are not accurate and are not comparable to ground counts.
- Conduct counts between ½ hour before sunrise to 1 hour after.
- Count attendance at each lek a minimum of three times annually during the breeding season.
- Conduct counts only when wind speeds are less than 15 kph (~10 mph) and no precipitation is falling.
- All leks within a complex should be counted on the same morning.

**Lek Count Route** – A lek route is a census of a group of leks that are relatively close and represent part or all of a single breeding population/sub-population. Leks should be counted on routes to facilitate repetition by other observers, increase the likelihood of recording satellite leks, and account for shifts in breeding birds if they occur. Lek routes should be established so that all leks along the route can be counted within 1.5 hours following the criteria listed under “Lek Count”.

**Lek Survey** - Ideally, all sage-grouse leks would be counted annually. However, some breeding habitat is inaccessible during spring because of mud and snow, or the location of a lek is so remote it cannot be routinely counted. In other situations, topography or vegetation may prevent an accurate count from any vantage point. In addition, time and budget constraints often limit the number of leks that can be visited. Where lek counts are not feasible for any of these reasons, surveys are the only reliable means to monitor population trends. Lek surveys are designed principally to determine whether leks are active or inactive, requiring as few as one visit to a lek. Obtaining accurate counts of the numbers of males attending is not essential. Lek surveys involve substantially less effort and time than lek counts. They can also be done from a fixed-wing aircraft or helicopter. Lek surveys can be conducted from the initiation of strutting in early March until early-mid May, depending on the site and spring weather.

**Annual status** – Lek status is assessed annually based on the following definitions:

- **active** – Any lek that has been attended by male sage-grouse during the strutting season. Acceptable documentation of grouse presence includes observation of birds using the site or signs of strutting activity.

· **inactive** – Any lek where sufficient data suggests that there was no strutting activity throughout a strutting season. Absence of strutting grouse during a single visit is insufficient documentation to establish that a lek is inactive. This designation requires documentation of either: 1) an absence of birds on the lek during at least 2 ground surveys separated by at least 7 days. These surveys must be conducted under ideal conditions (4/1-5/7, no precipitation, light or no wind, ½ hour before to 1 hour after sunrise) or, 2) a ground check of the exact known lek site late in the strutting season (after 4/15) that fails to find any sign (droppings/feathers) of strutting activity. Data collected by aerial surveys may not be used to designate inactive status.

· **unknown** – Leks for which status as active or inactive has not been documented during the course of a strutting season. Use of this status should be rare. Leks should be checked with enough visits to determine whether it is active or not. It is better to have two good checks every other year and confirm it "inactive" than to check it once every year, not see birds, but remain in “unknown” status.

**Management status** - Based on its annual status, a lek is assigned to one of the following categories for management purposes:

· **occupied lek** – A lek that has been active during at least one strutting season within the prior ten years. Occupied leks are protected through prescribed management actions during surface disturbing activities.

· **unoccupied lek** – (Formerly “historical lek”.) There are two types of unoccupied leks, “destroyed” and “abandoned.” Unoccupied leks are not protected during surface disturbing activities.

· **destroyed lek** – A formerly active lek site and surrounding sagebrush habitat that has been destroyed and is no longer suitable for sage-grouse breeding. A lek site that has been strip-mined, paved, converted to cropland or undergone other long-term habitat type conversion is considered destroyed. Destroyed leks are not monitored unless the site has been reclaimed to suitable sage-grouse habitat.

· **abandoned lek** – A lek in otherwise suitable habitat that has not been active during a period of 10 consecutive years. To be designated abandoned, a lek must be “inactive” (see above criteria) in at least four non-consecutive strutting seasons spanning the ten years. The site of an “abandoned” lek should be surveyed at least once every ten years to determine whether it has been reoccupied by sage-grouse.

· **undetermined lek** – Any lek that has not been documented active in the last ten years, but survey information is insufficient to designate the lek as unoccupied. Undetermined leks will be protected through prescribed management actions during surface disturbing activities until sufficient documentation is obtained to confirm the lek is unoccupied. Use of this status should be rare (see “unknown” above).

**Winter Concentration Area** - During winter, sage-grouse feed almost exclusively on sagebrush leaves and buds. Suitable winter habitat requires sagebrush above snow. Sage-



grouse tend to select wintering sites where sagebrush is 10-14 inches above the snow. Sagebrush canopy cover utilized by sage-grouse above the snow may range from 10 to 30 percent. Foraging areas tend to be on flat to generally southwest facing slopes or on ridges where sagebrush height may be less than 10 inches but the snow is routinely blown clear by wind. When these conditions are met, sage-grouse typically gain weight over winter. In most cases winter is not considered limiting to sage-grouse. Under severe winter conditions grouse will often be restricted to tall stands of sagebrush often located on deeper soils in or near drainage basins. Under these conditions winter habitat may be limiting. On a landscape scale, winter habitats should allow sage-grouse access to sagebrush under all snow conditions. Large numbers of sage-grouse have been documented to persistently use some specific areas which are characterized by the habitat features outlined above. These areas should be delineated as “winter concentration areas”. Winter concentration areas do not include all winter habitats used by sage-grouse, nor are they limited to narrowly defined “severe winter relief” habitats. Delineation of these concentration areas is based on determination of the presence of winter habitat characteristics confirmed by repeated observations and sign of large numbers of sage-grouse. The definition of “large” is dependent on whether the overall population is large or small. In core population areas frequent observations of groups of 50+ sage-grouse meet the definition while in marginal populations group size may be 25+. Consultation and coordination with the WGFD is required when delineating winter concentration areas.

### **Other Important Surveys:**

The recommended surveys to document sage grouse use in sagebrush habitat where no breeding complexes are known, are 0.5 mile spaced transect surveys conducted by foot or vehicle (ATV). Sage grouse signs, such as droppings or feathers, should be noted.

### **Sage grouse brood rearing**

- Document location of hens with chicks (number) during June 1 to July 30 using GPS equipment.

### **Locating Sage-Grouse Winter Concentration Areas**

The following section is an excerpt from a draft (02/04/04) chapter of the WGFD’s Wyoming Handbook of Biological Techniques concerning monitoring of sage-grouse.

Unlike breeding populations and production, there are no widely accepted methods for assessing winter populations. In part, this is because birds may be spread out over large areas during mild winters but concentrated in a relatively small proportion of the area in severe winters.

### **Methodology**

Probable winter use areas can be searched, during periods of deep snow and cold temperatures from December 1 to February 30, by 4-wheel drive vehicle, snowmobile, or on foot to document sage-grouse winter habitat. Aerial surveys using either a fixed-wing aircraft or helicopter may also be effective in identifying sage-grouse winter habitats and can often be done in conjunction

with surveys for other wildlife (e.g. elk trend counts/classifications). North-South transects flown about one minute of longitude apart are recommended. This transect width is not designed to allow complete coverage of an area for "census" purposes. Rather, it is designed to be able to cover significant acreage and determine relative distribution/habitat use patterns. Not every group of grouse will be seen.

Tracks/sign should be recorded along with observations of live birds. Under good conditions (sunlight and fresh, uncrusted snow cover) grouse tracks are quite easy to see at 300 feet or lower level. Tracks are usually seen in groups, the individual tracks tend to wander in a "snakelike" pattern rather than a straight line, and the bird's abdomens plow the snow.

Data collected should include at least approximate flock size and location. In addition, cover type (including sagebrush species present), topography, and snow depth data are also valuable but may not be possible to obtain from the aerial observations. The WGFD's Sage-Grouse Observation Form may be used in this effort. Data should be acquired over a series of years with different snow conditions to give a more complete picture of winter grouse distribution.

#### SHARPTAILED GROUSE LEK SURVEY & COUNT METHODOLOGY

Same methodology as used for sage grouse.

- **Mountain plover**

## **MOUNTAIN PLOVER SURVEY GUIDELINES-WYOMING**

### **U.S. Fish and Wildlife Service**

**March 2002**

#### **SURVEY PROTOCOL**

Surveys for mountain plovers are conducted during the period where the highest numbers of plovers are likely to be tending nests and territories, and therefore are most likely to be detected. Throughout their range, these dates are generally from May 01 through June 15. However, seasonal restrictions for ground disturbing activities in suitable mountain plover nesting habitats are usually longer than the survey dates. The longer seasonal restrictions allow for protection of early nesting birds, and very young chicks which tend to sit still to avoid detection during the first week post-hatch. Since specific nesting dates across the breeding range of the plover vary according to latitude and local weather, the project proponent or the land management agency should contact the local U.S. Fish and Wildlife Service Office to determine what seasonal restrictions apply for specific projects.

Two types of surveys may be conducted: 1) surveys to determine the presence/absence of breeding plovers (i.e., displaying males and foraging adults), or 2) surveys to determine nest density. The survey type chosen for a project and the extent of the survey area (i.e., beyond the edge of the construction or operational ROW) will depend on the type of project activity being analyzed (e.g., construction, operation) and the users intent. One methodology outlines a breeding survey that was used in northeastern Colorado to establish the density of occupied territories, based on displaying male plovers or foraging adults. The other was developed to only determine whether plovers occupy an area.

#### **Techniques Common to Each Survey Method**

- Conduct surveys during early courtship and territorial establishment. Throughout the breeding range, this period extends from approximately mid-April through early July. However, the specific breeding period, and therefore peak survey days, depends on latitude, elevation, and weather.
- Conduct surveys between local sunrise and 1000 and from 1730 to sunset (periods of horizontal light to facilitate spotting the white breast of the adult plovers).
- Drive transects within the project area to minimize early flushing. Flushing distances for mountain plovers may be within 3 meters for vehicles, but plovers often flush at 50 to 100 meters when approached by humans on foot.
- Use of a 4-wheel drive vehicle is preferable where allowed. Use of ATVs has proven highly successful in observing and recording displaying males. Always seek guidance from land management agencies regarding use of vehicles on public lands, and always obtain permission of private landowners before entering their lands.

- Stay in or close to the vehicle when scanning. Use binoculars to scan and spotting scopes to confirm sightings. Do not use scopes to scan.
- Do not conduct surveys in poor weather (i.e., high wind, precipitation, etc.).
- Surveys conducted during the courtship period should focus on identifying displaying or calling males, which would signify breeding territories.
- For all breeding birds observed, conduct additional surveys immediately prior to construction activities to search for active nest sites.
- If an active nest is located, an appropriate buffer area should be established to prevent direct loss of the nest or indirect impacts from human-related disturbance. The appropriate buffer distance will vary, depending on topography, type of activity proposed, and duration of disturbance. For disturbances including pedestrian foot traffic and continual equipment operations, a 1/4-mile buffer is recommended.

## **SURVEY TO DETERMINE PRESENCE/ABSENCE**

### **Large scale/long term projects**

- Conduct the survey between May 1 and June 15, throughout the breeding range.
- Visual observation of the area should be made within 1/4 mile of the proposed action to detect the presence of plovers. All plovers located should be observed long enough to determine if a nest is present. These observations should be made from within a stationary vehicle, as plovers do not appear to be wary of vehicles. Because this survey is to determine presence/absence only, and not calculate statistical confidence, there is no recommended distance interval for stopping the vehicle to scan for birds. Obviously numerous stops will be required to conduct a thorough survey, but number of stops should be determined on a project and site-specific basis.
- If no visual observations are made from vehicles, the area should be surveyed on ATVs.
- Extreme care should be exercised in locating plovers due to their highly secretive and quiet nature. Surveys by foot are not recommended because plovers tend to flush at greater distances when approached using this method. Finding nests during foot surveys is more difficult because of the greater flushing distance.
- A site must be surveyed 3 times during the survey window, with each survey separated by at least 14 days. The need for 3 surveys is to capture the entire nesting period, with the intent of reducing the risk of concluding the site is not nesting habitat by an absence of nesting birds during a single survey.
- Initiation of the project should occur as near to completion of the survey as possible. For example, seismic exploration should begin within 2 days of survey completion. A 14-day period may be appropriate for other projects.
- If an active nest is found in the survey area, the planned activity should be delayed 37 days, or seven days post-hatching. If a brood of flightless chicks is observed, activities should be delayed at least seven days.

### **Short-term, linear projects**

The Service recognizes that many projects have minimal, if any impact on mountain plover nesting habitat, and that these projects may only be present in suitable habitat for a day or less. In order to address concerns from project proponents about delays associated with mountain plover surveys for these projects, the Service has developed the following guidelines. However, the Service encourages the project proponent to plan these projects so that all work occurs outside the plover-nesting season.

Short-term linear projects are defined as projects, which move through an area within the course of a day and result in no permanent habitat alteration (e.g., vegetative/topographic changes), and no permanent project-related above ground features. Short-term, linear projects may include activities such as pipelines, fiber optic cables, and seismic exploration. For these projects, all ROW surveying/staking activities should be completed before April 1 to avoid discouraging plovers from nesting in suitable habitat. If ROW surveying cannot be completed before April 1, surveyors will need to coordinate with the lead Federal agency before entering these areas, and a plover survey may be required prior to ROW demarcation. For these projects, the presence/absence guidelines above should adhere to the dates below.

**1. April 10 through July 10** - a plover survey will need to be completed 1- 3 days prior to any construction activity, including initial brush clearing, to avoid direct take of mountain plovers. The survey should include the route and a ¼-mile buffer on either of the project corridor. If there is a break in construction activity in these areas of more than 3 days (e.g., between pipe stringing, trenching, or welding), an additional plover survey is necessary before construction activity can resume after that break in activity. Generally, mountain plovers are either establishing territories and/or nests in April, and from late June to early July young chicks commonly freeze in place to avoid detection, increasing their vulnerability to direct take. After July 10, most mountain plover chicks are sufficiently mobile to reduce the risk of direct take.

**2.** If an active nest is found in the survey area, the planned activity should be delayed 37 days, or seven days post-hatching. If a brood of flightless chicks is observed, activities should be delayed at least seven days.

## **SURVEY TO DETERMINE DENSITY OF NESTING MOUNTAIN PLOVERS**

We are assuming people will have received training on point counts in general before using this specialized point count technique adapted to mountain plovers.

### **Establishing Transects**

Identify appropriate habitat and habitat of interest within geographic areas of interest.

Upon arriving in appropriate habitat, drive to a previously determined random starting point.

For subsequent points, drive a previously determined random distance of 0.3, 0.4 or 0.5 miles.

Each transect of point counts should contain a minimum of 20 points.

### **Conducting The Point Counts**

1. Conduct counts between last week in June to July 4<sup>th</sup> at elevations equivalent to the eastern plains of Colorado (i.e., about 5,000 feet). Timing of counts at other elevations should be coordinated with the local FWS office.

2. Only 1 counter is used. Do not use a counter and recorder or other combinations of field help. Drivers are okay as long as they don't help spot plovers.

3. If an adult mountain plover is observed, plot occupied territories on a minimum of 1:24,000 scale maps and on a ROW diagram or site grid (see attached). The ROW diagram will be at a greater level of detail, depicting the location of breeding birds (and possible nest sites) relative to ROW centerline, construction boundary, and applicable access roads.

4. Estimate or measure distances (in meters) to all mountain plovers. Method used should be noted, e.g., estimates w/distance training, estimates w/o distance training, rangefinder or measured with tape measure, etc.

5. Record "flyovers" as "FO" in the distance column of the data sheet.

6. If you disturb a mountain plover while approaching the point, estimate the distance from point-center to the spot from which the bird was flushed.

7. Conduct counts for 5 minutes with a 3-minute sub sample to standardize with BBS.

8. Stay close to your vehicle while scanning.

### **Recording Data**

RECORD THE FOLLOWING INFORMATION AT EVERY POINT, EVERY DAY:

- Start time
- Unique point code (don't duplicate within a field crew or across dates)
- Number of mountain plovers and distance to each
- Land use and/or habitat type (e.g., fallow wheat, plowed, shortgrass)
- Temperature, Beaufort wind, and sky conditions (clear, partly cloudy, overcast) information on the data sheet somewhere.
- Your name and address
- Date
- Record for each point at some point during the census. ?????

- Detailed location description of each point count including road number, distance to important intersections.
- Record transects and point locations on USGS county maps.
- Universal Transverse Mercator from maps or GPS are useful.

## **GENERAL HABITAT INDICATORS**

### **Positive habitat images**

- Stock tank (non-leaking, leaking tanks often attract killdeer)
- Flat (level or “tilted”) terrain
- Burned field/prairie/pasture
- Bare ground (minimum of 30 percent)
- “Spaced” grass plants
- Prairie dog colonies
- Horned larks
- Cattle
- Heavily grazed pastures
- *Opuntia* pads visible

### **Negative habitat images**

- Killdeer present (indicating less than optimal habitat)
- Hillsides or steep slope
- Prominent, obvious low ridge - Leaky stock tanks
- Vegetation greater than 4 inches in height in short-grass prairie habitat
- Increasing presence of tall shrubs
- Matted grass (i.e., minimal bare ground)
- Lark buntings

- **Goshawk**

## **SURVEY PROTOCOL FOR PRESENCE OF NORTHERN GOSHAWK**

Northern Goshawk *Accipiter gentilis atricapillus* (hereafter referred to as goshawk) have been proposed for listing on the Endangered Species several times, but the validity of research and population estimates supporting these claims have been questioned. Currently, goshawks are considered a sensitive species or species of concern throughout the majority of their range. At present, the primary threat to the sustainability of the species is the alteration of preferred habitat by current forest management practices (Kennedy 2003).

In order to adequately protect and manage this species, it is imperative we determine accurate population estimates. This procedure is designed to aid in the determination of the presence of goshawks, and facilitate understanding of current population densities within the Bureau of Land Management Newcastle Wyoming Field Office.

### **Seasonal Timing** (Boyce et al. 2005)

March-April (Courtship): listening stations

May-June (Nestling stage): tree searches on parallel transects (Alarm Call)

July-September (Fledgling): broadcast call of wailing and food begging (Fledgling Beg Call)

### **Daily Timing**

Goshawks are active throughout the day so the time of day in which surveys are conducted is not an issue, and Kennedy and Stahlecker (1993) conducted their surveys from ½ hour before sunrise until sunset. However, if the wind exceeds 7 meters/second (15 miles/hour), the trial should not be conducted.

### **Locations of survey points** (Kennedy and Stahlecker 1993)

Stations should be set up 300 m apart on transects which are 260 m apart. Also, stations on adjacent transects should be offset by 130 m (Kennedy and Stahlecker 1993).

Considerations: (Kennedy 2003)

Goshawks prefer mature forests with large trees, relatively closed canopy.

Nests are frequently found near lower portion of moderate slopes, close to water, and often adjacent to a canopy break.

### **Number of Surveys to Conduct**

A minimum of three visits to a survey area should be conducted in order to confidently assume presence/absence of goshawk, provided a nest is not located (Boyce et al. 2005). A reasonable amount of time (7 to 10 days) should elapse between surveys done at a particular site. Survey the area for a minimum of two nesting seasons, and survey at least once during the 10-12 week brooding period (Kennedy and Stahlecker 1993).



## **Conducting the Survey** (Kennedy and Stahlecker 1993)

### **Broadcasting considerations**

- If the wind exceeds 15 miles/hour, the trial should not be conducted (see Table 1 for estimating wind speed)
- While conducting broadcasts, it is important to be aware of goshawk mimicry by Steller's jays *Cyanocitta stelleri* and gray jays *Perisoreus canadensis*.
- Minimize topographical interference with sound waves and maximize sound projection.
- In order to minimize disturbance, DO NOT broadcast during courtship.
- Alarm call is best used during nesting stage.

### **Broadcasting** (Kennedy and Stahlecker 1993)

- While walking transects and approaching stations, observer should be scanning the area visually as well as listening for the presence of goshawk.
- Observer should also be scanning area by sight and sound throughout the broadcast.
- Following is the procedure to follow upon arrival at each station:
  - Broadcast at 60 degrees for 10 seconds
  - Broadcast at 180 degrees for 10 seconds
  - Broadcast at 300 degrees for 10 seconds
  - Look and listen for 30 seconds
  - Broadcast at 60 degrees for 10 seconds
  - Look and listen for 30 seconds
  - Broadcast at 180 degrees for 10 seconds
  - Look and listen for 30 seconds
  - Broadcast at 300 degrees for 10 seconds
  - Look and listen for 30 seconds
- Calls can be broadcast with a preferred output of 100-110 dB one meter from source.
- Territory is considered occupied if observer hear and/or see adults on or near nest and/or see evidence of nest construction, especially green on rim of nest.
- GPS location of call, record date/time, habitat type, response, wind speed, weather, individual conducting survey, and other comments as appropriate.

## **Data Entry Definitions**

### **Habitat:**

Aspen, Burned Conifer, Juniper Woodland, Ponderosa Pine, Spruce-Fir, Other (explain in comments).

Response:

- ☐ Vocal pos: Positive identification of a vocal response from a goshawk.
- ☐ Visual: Positive visual identification of a goshawk.
- ☐ Voc/Vis: Positive identification of a goshawk and vocal response received.
- ☐ No Resp: No response
- ☐ Vocal unkn: Vocal response received and unable to positively identify response as a goshawk (i.e. mimic from a jay).
- ☐ Mimic: Mimic call from a jay confirmed.

Wind Speed:

Table 1

MPH	DESCRIPTION	SPECIFICATIONS FOR USE ON LAND
0-1	Calm	Calm; smoke rises vertically.
1-3	Light air	Direction of wind shown by smoke drift, but not by wind vanes
4-7	Light Breeze	Wind felt on face; leaves rustle; ordinary vanes moved by wind.
8-12	Gentle Breeze	Leaves and small twigs in constant motion; wind extends light flag.
13-18	Moderate Breeze	Raises dust and loose paper; small branches are moved.

Weather:

Clear, Overcast, Partly Cloudy

Comments:

Enter any pertinent information such as wildlife present, dog hair stands, previous thinning, coarse woody debris concentration, etc.

Individual Conducting Survey:

Enter Name of individual/s conducting survey.

**References:**

Boyce et al. 2005. When are goshawks not there? Is a single visit enough to infer absence at occupied nest areas? The Raptor Research Foundation, Inc. 39(3):296-302.  
Kennedy, P.L. and D.W. Stahlecker. 2003. Responsiveness of nesting Northern Goshawks to taped broadcasts of 3 conspecific calls. Journal of Wildlife Management 57(2):249-257.  
Kennedy, P.L. 2003. Northern Goshawk (*Accipiter gentilis atricapillus*): a technical conservation assessment. USDA Forest Service Species Conservation Project

## • **Raptors**

### RAPTOR NESTING / HABITAT

#### **Recommended protocol based on peer reviewed publications.**

1. Surveys should be conducted within 0.5 miles of proposed surface disturbance or activity to document nest activity during April 15 to June 15. Surveys outside this period may not accurately depict nesting activity. It is recommended for early nesting species such as eagles and great-horned owls that this survey be conducted early as possible, while late nesting species could be conducted later in the survey window. Surveys for nest sites between Feb. 1 and April 15 shall be avoided to protect this sensitive breeding and nesting period. Surveys conducted at other times of the year, are allowed however a nest occupancy check and/or additional surveys may be required.
2. Surveys should be done in important raptor habitat including: rock outcrops, cliffs, ridges, knolls, stream banks, conifer, and cottonwood trees. Nests should be recorded in UTM coordinates using NAD83 datum.
3. Optimum weather conditions for surveys are clear, calm days. Nests should be approached cautiously to avoid flushing the female, and their status (ie, number of nestling) will be determined from a distance with binoculars or a spotting scope.
4. Nests will not be visited during adverse weather conditions (e.g. extreme cold, precipitation events, windy periods or during the hottest part of the day). Visits will be as brief as possible.
5. Photograph the nest to help illustrate nest shape, condition, and substrate.
6. Data should be recorded on the standardized form, and summarized for project reports in a table format; data should be provided to the land management agency in a digital format. Field names and codes to use are as follows:

#### Species

**BUOW** = Burrowing Owl    **OSPR** = Osprey    **COHA** = Cooper's Hawk    **PEFA** = Peregrine Falcon    **FEHA** = Ferruginous Hawk    **PRFA** = Prairie Falcon    **GOEA** = Golden Eagle    **RETA** = Red-tailed Hawk    **GRHO** = Great Horned Owl    **SWHA** = Swainson's Hawk    **NOGO** = Northern Goshawk    **SHHA** = Sharp-shinned hawk    **BAEA** = Bald Eagle    **UNAC** = Unknown Accipiter    **AMKE** = American Kestrel    **UNBU** = Unknown Buteo    **LOOW** = Long-eared Owl    **UNOW** = Unknown Owl    **MERL** = Merlin    **UNRA** = Unknown Raptor    **NOHA** = Northern Harrier

#### NEST SITE ELEVATION

Enter the elevation at the nest in feet. (**NOT** nest height, but the elevation of the terrain)

## NEST STATUS

Status of the nest when observed (4 Characters)

<b>OCCU</b> <b>OCCU</b> upied	A nest in which a breeding attempt was made, indicated by fresh lining material in the nest, adult presence at or near the nest, a recent and well-used perch site near the nest, eggs or young in the nest, fledged young near the nest, or an incubating or brooding adult on the nest.
<b>OCFA</b> <b>OC</b> cupied <b>FA</b> iled	An occupied nest that did not fledge young.
<b>OCCAL</b> <b>OC</b> cupied <b>AL</b> ternate	A tended nest within the boundaries of a territory housing an occupied nest.
<b>UNOC</b> <b>UNOC</b> upied	A nest with no apparent recent use or adult presence at the time of observation, but in good condition.
<b>UNAL</b> <b>UN</b> occupied <b>AL</b> ternate	An unoccupied nest within a territory that contains an occupied nest.
<b>UNDI</b> <b>UN</b> occupied <b>DI</b> lapidated	An unoccupied nest in a state of ruin due to weather, natural aging, and/or neglect.
<b>UNDE</b> <b>UN</b> occupied <b>DE</b> stroyed	A nest showing no sign of raptor activity that is destroyed to the point that it is no longer useable without major reconstruction. These nests, for all practical purposes, have disappeared.
<b>GONE</b> Nest was <b>GONE</b>	A nest that was located during a previous study but was completely destroyed with no sign of any nest material in a subsequent study.
<b>UNKN</b> <b>UNKN</b> own	A nest whose status was undetermined during subsequent surveys in the same nesting season.

## NEST CONDITION

**GONE:** There may or may not be evidence of where the nest was, but it is no longer there.

**REMNANTS:** Scant material remaining and not usable unless fully rebuilt.

**POOR:** Nest is dilapidated, in need of major repair to be used.

**FAIR:** Nest is not dilapidated, but needs significant repair in order to be used.

**GOOD:** Nest is in need of only minor attention in order for it to be used.

**EXCELLENT:** Nest is able to be used with little or no attention or maintenance.

**UNKNOWN:** The nest is obviously present (i.e. a tree cavity, rock cavity), but because of its location, a determination can't be made.

## NUMBER OF EGGS

Record the number of eggs in the nest.

## NUMBER OF YOUNG

Record the number of young in the nest.

### DATE OBSERVED

Date of observation in Month/Day/Year format (MM/DD/YYYY). This format applies to the date of the first observation and the dates of all future observations.

### OBSERVED BY

Record the name of the person making the first observation of this nest.

### NEST SUBSTRATE

**SUBSTRATE** (3 characters) = The substrate that the nest is built upon.

CLF	=	Cliff	MMS	=	Manmade Structure (e.g. nest platform, windmill, etc.)
CKB	=	Creek Bank	POL	=	Ponderosa Pine (Live)
CTL	=	Cottonwood (Live)	POD	=	Ponderosa Pine (Dead)
CTD	=	Cottonwood (Dead)	ROC	=	Rock Outcrop
ELL	=	Elm (Live)	WIL	=	Willow (Live)
GHS	=	Ground/Hillside			

### HEIGHT OF SUBSTRATE

Record (in feet) the height of the substrate upon/in which the nest is located. Height of the cliff/butte/tree/etc. above the surrounding terrain.

### HEIGHT OF NEST ON SUBSTRATE

Record (in feet) the height of the nest on/in the substrate (i.e. height of tree nest above the ground; height of cliff nest on cliff edge of pillar nest above the surrounding terrain).

### NEST EXPOSURE

Record the general direction of nest exposure (i.e. N, NE, S, SW, WNW, etc.)

### VEGETATION TYPE

Indicates the type of habitat/vegetation found around the nest site

<b>Badland</b>	<b>Mixed Mountain Shrub</b>	<b>Ponderosa</b>
<b>Bitterbrush Shrubland</b>	<b>Ponderosa Pine</b>	<b>Pine/Skunkbrush</b>
<b>Cottonwood/Riparian</b>	<b>Woodland</b>	<b>Riparian</b>
<b>Cultivated Cropland</b>	<b>Ponderosa</b>	<b>Sagebrush/Grassland</b>
<b>Cultivated/Reseeded</b>	<b>Pine/Grassland</b>	<b>Short Grass Prairie</b>
<b>Grassland</b>	<b>Ponderosa/Juniper</b>	
<b>Juniper Woodland</b>	<b>Woodland</b>	

### REMARKS

Any unique features, physical relationships to other nests, proximity to human disturbances, or other pertinent observations are to be placed in the remarks section.

- **Burrowing Owl**

## **SURVEY PROTOCOL FOR BURROWING OWL**

Western Burrowing Owls *Athene cunicularia hypugaea* are commonly found in prairie dog towns but will nest in other prairie habitat with suitable burrows. Burrowing owls require suitable burrows for nesting and roosting. Burrowing owls are migratory, breeding throughout the western United States, southern Canada, and northern Mexico and wintering in the southern United States and throughout New Mexico.

Federal and state laws prohibit the harming or killing of burrowing owls and the destruction of active nests. It is possible to inadvertently kill burrowing owls during prairie dog poisoning projects, removal of prairie dogs, destruction of burrows and prairie dogs using a concussive device, or during earth moving for construction. Because burrowing owls often hide in burrows when alarmed, it is not practical to haze the birds away from prairie dog towns prior to prairie dog poisoning/removal, burrow destruction, or construction activity. Because of this, the Newcastle Office of the Bureau of Land Management recommends surveying suitable habitat for burrowing owl presence before potentially harmful activities are initiated.

The following guidelines are intended as advice on how to determine if burrowing owls are present, and what to do if burrowing owls are detected. These guidelines do not guarantee that burrowing owls will be detected if they are present. However, adherence to these guidelines will greatly increase the likelihood of detection.

### Seasonal Timing and Number of Surveys

Three surveys should be conducted to determine presence of burrowing owls. The first survey should be conducted during times when burrowing owls may be nesting or incubating (May 1- May 31), the second survey should be when most owls have young nestlings (June 1-15), and a third survey when nestlings are above ground (June 16 – July 15). Surveys should be separated by approximately one week. Surveys should be conducted for any activities occurring between 15 April and 1 September.

### Number and locations of survey points

Burrowing owls are most often located visually, thus, obtaining a clear view of the entire survey area is necessary. For small project areas that can be adequately viewed in their entirety from a single location, only one survey point is necessary. The survey point should be selected to provide unobstructed views (with binoculars if necessary) of the entire area (burrow mounds and open areas between) and all nearby structures that may provide perches (fences, utility poles, etc).

For areas that cannot be entirely viewed from a single location because of terrain or size, enough survey points should be established to provide unobstructed views of the entire area and nearby

structures that may provide perches. Survey locations should be separated by approximately 800 meters (1/2 mile), or as necessary to provide adequate visual coverage of the entire area.

### **Conducting the survey**

Call-broadcast surveys: Call-broadcast surveys are required to increase the likelihood of detecting burrowing owls, if present. Conway and Simon (2003) detected 22% more burrowing owls at point-count locations by broadcasting the primary male (coo-coo) and alarm (quick-quick-quick) calls during surveys. 70% of burrowing owls detected by Conway et al. (2008) in NE Wyoming were during the 3 30-second call broadcast periods. Although call-broadcast may increase the probability of detecting burrowing owls, most owls will still be detected visually.

Each transect should be 1 mile and points 0.5 miles apart. Calls should be broadcast at 80 -90 decibels (measured 1 meter from the speaker) and rotated in each cardinal direction.

The observer should scan the area for burrowing owls during the entire survey period.

- 3 minutes of silence

- 30 seconds call-broadcast of primary call (coo-coo)

- 30 seconds of silence

- 30 seconds call-broadcast of primary call (coo-coo)

- 30 seconds of silence

- 30 seconds call-broadcast of alarm call (quick-quick-quick)

- 30 seconds of silence

- 4 minutes of silence

During surveys observers should ensure they are searching the entire 360° area around the broadcast point.

Calls can be broadcast from a “boom box”, predator call, or a portable CD or cassette player attached to amplified speakers. Calls should be broadcast loudly but without distortion. An mp3 file of the broadcast survey is available from the Newcastle Field Office.

### **Daily Timing**

Burrowing owls are active throughout the day; however, peaks in activity in the morning and evening make these the best times for conducting surveys (Conway and Simon 2003, Conway et al. 2008). Surveys should be conducted in the early morning (1/2 hour before sunrise until 2 hours after sunrise) and early evening (2 hours before sunset until 1/2 hour after sunset).

Weather conditions: Because poor weather conditions may impact the ability to detect burrowing owls, surveys should be conducted on days with wind speed below 7 miles per hour, ambient temperature > 68° F, and no precipitation.

Visual Searches: Most burrowing owls (90%) are detected visually (Conway et al. 2003). At each survey location, the observer should *visually* scan the area to detect any owls that are present. Some burrowing owls may be detected by their call, so observers should *listen* for burrowing owls while conducting the survey.

Burrowing owls are frequently detected soon after initiating a survey (Conway and Simon 2003). However, some burrowing owls may not be detected immediately because they are inconspicuous, are inside of burrows, or are not present on the site when survey is initiated. Surveys should be conducted for 10 minutes at each survey location.

#### Identification

Adult burrowing owls are small, approximately 9-11 inches. They are brown with white spotting and white barring on the chest. They have long legs in comparison to other owls and are frequently seen perching on the prairie dog mounds or other suitable perches (fence posts, utility posts, etc.). Juvenile burrowing owls are similar to adults but smaller, with a white/buff colored chest that lacks barring.



#### References

Conway, Courtney J., and John C. Simon. "Comparison of Detection Probability Associated With Burrowing Owl Survey Methods." *Journal of Wildlife Management* 67.3 (2003): 501-11

Conway, Courtney J., Victoria Garcia, Matthew D. Smith, and Katie Hughes. "Factors Affecting Detection of Burrowing Owl Nests During Standardized Surveys." *Journal of Wildlife Management* 72.3 (2008): 688-96. Print.

Crowe, Dorothy E., and Kathleen M. Longshore. "Estimates of Density, Detection Probability, and Factors Influencing Detection of Burrowing Owls in the Mojave Desert." *The Journal of Raptor Research* 44.1 (2010): 1-11. Print.

#### • Ute-Ladies Tresses Orchid



## **RECOMMENDATIONS AND GUIDELINES FOR UTE LADIES'-TRESSES ORCHID (*Spiranthes diluvialis*) RECOVERY AND FULFILLING SECTION 7 CONSULTATION RESPONSIBILITIES**

June 1995

### **BACKGROUND**

Ute ladies'-tresses orchid (*Spiranthes diluvialis*) is endemic to moist soils near springs, lakes, or perennial streams. The elevational range of known orchid occurrences is 4,200 to 7,000 feet. Most of the occurrences are in alluvial substrates along riparian edges, gravel bars, old oxbows, and moist to wet meadows in the floodplains of perennial streams, but some locations in the eastern Great Basin are in similar situations near freshwater lakes or springs. The orchid appears to require moisture in the rooting zone, typically provided by a high ground water table, through the growing season and into late summer or early autumn. The orchid is well adapted to disturbances caused by stream movement through floodplains over time, and is tolerant of other disturbances, such as grazing, that may mimic natural disturbances in their effects on riparian habitat. Suitable potential habitat is typically found along streams that experience heavy spring runoff of sufficient magnitude to create movement and reshaping of the stream channel. Plants usually occur as small scattered groups and occupy relatively small areas within the riparian system. It is not known how, under what conditions, and in what time frame, the orchid is dispersed and new viable colonies established. The orchid is generally intolerant of deep shade and strongly alkaline or clay soils and cannot compete with aggressive rhizomatous species such as reed canarygrass (*Phalaris arundinacea*) and cattails (*Typha* spp.) or exotic species such as Canada thistle (*Cirsium arvense*). Attachment 1 provides a more complete description of orchid biology, life history, and ecology.

"Typical" orchid habitat, as described above, can be found throughout the Intermountain and Rocky Mountain west and the western plains. However, the orchid only occurs in significant numbers in two locations, in and near Boulder, Colorado along the east slope of the Front Range, and in the Uinta Basin along the south slope of the Uinta Mountains. Otherwise, it is found infrequently in widely scattered locations. Recent discoveries of colonies in Wyoming and Montana indicate that surveys for and inventories of orchid occurrences continue to be an important part of orchid recovery planning and implementation. The recovery team has identified and prioritized areas where survey and inventory of the orchid are important.

### **SECTION 7 CONSULTATION AND UTE LADIES'-TRESSES ORCHID SURVEYS**

Potential habitat is fairly common, yet orchid occurrences are infrequent and unpredictable. Because the probability of actually finding an orchid colony at any one location is small, the Service wishes to avoid the regulatory burden of requiring surveys under Section 7 of the Endangered Species Act for all projects throughout the potential range of the species. However, in order to recover the orchid, it is important that surveys be conducted in appropriate locations and in response to impending impacts to colonies or potential habitat. The Service has therefore developed the following recommendations and guidelines to help ensure that surveys are conducted where and when appropriate

#### **General Guidelines for Surveys**

Field Offices are encouraged to take the following actions regarding surveys for Ute ladies'-tresses orchid:

1. Solicit funds and organize partnership and volunteer efforts to conduct surveys in identified high priority areas, especially those in which future impacts are likely to occur. Survey efforts should be coordinated with state Natural Heritage Programs and with the orchid recovery team.
2. Acquaint all Service staff with the orchid, high priority areas for surveys, habitat preferences, and species identification. Staff should have the orchid in mind when visiting wetlands or streams for any purpose, and also when reviewing projects of any type, for example, fishery, wetland, or stream enhancement or alteration projects, FERC and 404 licenses, and surveys for other species of interest that may be in or near potential orchid habitat.
3. Develop relationships with state and other Federal partnership agencies to acquaint them with orchid habitat, appearance, and priority areas for survey. Encourage them to look for the orchid when in suitable areas and notify Service staff about projects that are planned for potential orchid habitat. Especially important partners include state wildlife agencies, state stream management or water quality agencies, Corps of Engineers, Natural Resources Conservation Service, Bureau of Reclamation, Forest Service and Bureau of Land Management.
4. Require surveys as part of Section 7 consultation under appropriate conditions in areas identified as high priority for surveys. Appropriate conditions include:
  - a. Large areas of potential habitat will be impacted. Examples of projects that can result in impacts to large areas of potential habitat include stream channelization and stabilization, stream habitat improvement, projects that impact downstream hydrology and hydrograph such as dams, diversions, and hydropower, gravel mining operations And streamside recreation trails.
  - b. Planning time frame allows a survey to be conducted, i.e., project will not be initiated until after the next orchid flowering period. If possible, surveys should be conducted for several years. Developers in priority survey areas should be educated about the orchid and the need for surveys. They should be encouraged to plan projects sufficiently ahead that surveys will be possible so that they will not be put in a bind should the Service determine that a proposed project will have an impact on potential orchid habitat of sufficient magnitude that a survey will be required before permits can be issued.

## **Recommendations and Guidelines for Section 7 Consultation**

The Service has placed potential habitat within the known distribution of Ute ladies'-tresses orchid into 3 categories for purposes of Section 7 consultation as follows:

### **Category 1: Surveys Required**

Ute ladies'-tresses orchid is currently documented as occurring within the watershed or is documented as having occurred within the watershed within the past 50 years. Surveys for the orchid should be required as part of Section 7 consultation for projects that will have an impact on potential habitat. Agencies, developers, and others who may propose projects in areas with potential habitat should be alerted that such surveys will be required and urged to schedule project planning so as to allow time for orchid surveys during the flowering period in late summer.

### **Category 2: Surveys Recommended**

Ute ladies'-tresses orchid may have occurred within the watershed or in nearby similar watersheds, however historical records are incomplete and the orchid is not now known to occur in the area. The watersheds are adjacent to or essentially similar in character to those where the orchid is currently known to occur. Surveys are recommended, particularly in circumstances when large areas of potential habitat will be impacted and/or when planning schedules permit surveys prior to project commencement. Project proponents should be alerted and encouraged to schedule project planning to as to allow time for orchid surveys.

### **Category 3: Surveys Encouraged**

Ute ladies'-tresses orchid is not known to occur in or near these watersheds. However, given the known distribution of the orchid and character of the watersheds, it is possible that the orchid could be discovered. Surveys are not required or recommended as part of Section 7 consultation. However, Service field offices and partners are strongly encouraged to organize and support survey efforts in these watersheds.

Attachment 2 is a list of Category 1, 2, and 3 areas in Idaho, Colorado, Montana, Nevada, Utah and Wyoming. The areas are referenced as watershed units or subunits from USGS Hydrologic Unit maps of each state. Within these watershed units, wetlands, springs and seeps, and riparian areas within the 100 year floodplain of perennial streams below 6,500 feet elevation should be considered potential habitat. Recommended survey areas in each category will be revised as new information becomes available.

## **Survey Procedures**

Ute ladies'-tresses orchid can only be reliably found and identified when it is flowering, which typically occurs sometime during the period from mid-July through mid-September. Surveys are conducted by walking or otherwise closely scrutinizing areas of potential habitat looking for flowering stalks. Surveys conducted at other times of the year are not reliable and are therefore not acceptable to the Service for purposes of clearance under Section 7.

■ Surveys should be conducted by knowledgeable botanists trained in conducting rare plant surveys. The Service does not maintain a list of "qualified" surveyors. However, the Service can refer those wishing to become familiar with the orchid to experts within their area who can help provide training.

## **Potential Habitat**

Within the recommended search areas, surveys should focus only on good potential habitat as described in the Background section and in Attachment 1.

## **Disqualified Habitat**

Considerable experience in conducting surveys in Colorado and Utah has led to identification of a number of habitat and landscape features that indicate that a site does not qualify as suitable potential habitat for Ute ladies'-tresses orchid. Most of these features can be identified at any time of year, often by as simple an activity as driving by in a vehicle. Surveyors are urged to visit sites where projects are proposed and surveys may be recommended to determine whether, and how much, of the site actually qualifies as good potential habitat. Typically, the amount of good potential habitat in a project area is limited. Therefore, if it is a hardship for a project to be postponed until the following summer in order for a survey to be completed, it is often possible to make minor design changes to avoid potential habitat. Caution must be taken to avoid alterations in hydrology, however.

The following features serve to disqualify potential orchid habitat:

1. Appropriate hydrology not present, typically indicated by:
  - a. area is composed of mostly upland vegetation.
  - b. area dries up by mid-July, with water table lower than 12 inches below the soil surface
2. Heavy clay soils present
3. Soils strongly alkaline
4. Site heavily disturbed, such as, for example:
  - a. stream banks channelized and stabilized by heavy rip-rap
  - b. highway rights-of-way built on filled or compacted soil or rock material

- c. construction sites where construction has either stripped the topsoil or where construction has been completed within the last 5 years but the area has not been revegetated
  - d. (note that Ute ladies'-tresses orchid has been found in some heavily disturbed sites where hydrology is appropriate, such as revegetated gravel pits, heavily grazed riparian edges and pastures, and along well-traveled trails developed on old berms)
5. Stream banks steep, transition from stream margin to upland areas abrupt
  6. Site characterized by standing water with cattails, bullrushes, and other aquatic vegetation (note that margins of such areas may be suitable habitat)
  7. Riparian areas or stream banks vegetated with dense rhizomatous species such as reed canarygrass (*Phalaris arundinacea*), tamarisk or salt cedar (*Tamarix ramosissima*), teasel (*Dipsacus sylvestris*), common reed (*Phragmites australis*), or saltgrass; (*Distichlis spicata spicata*)
  8. Riparian areas overgrazed or otherwise managed such that the vegetation community is composed of upland native or weedy species or is unvegetated. Note that the orchid can tolerate rather extreme overgrazing as long as it has not resulted in a drop in the water table as indicated by conversion of the riparian vegetation community to mostly upland species.
  9. Potential habitat is no longer in a natural condition, for example, has been converted to agricultural uses and is now plowed and cropped, or has been converted to lawns or golf courses
  10. Wetland is a brackish playa or pothole not fed by springs or not in the floodplain of or connected hydrologically with a riparian system or other source of fresh water

## PERMITS AND VOUCHER SPECIMENS

Ute ladies'-tresses orchid (*Spiranthes diluvialis*) can be mistaken with a closely related species, *Spiranthes romanzoffiana*, which generally grows at higher elevations. It is important that potential new discoveries be appropriately identified and verified. However, since Ute ladies'-tresses orchid often occurs in very small numbers, destructive sampling may be undesirable. Proper verification of new locations of Ute ladies'-tresses orchid should include (1) identification of the species by experts, (2) depositing a voucher specimen in an authorized institution, and (3) completion of a data form, such as an Element Occurrence Record form provided by the state Natural Heritage Program, and submission of the form to the state Natural Heritage Program and the Service.

Field Offices should have at least one staff person with a permit for collecting *Spiranthes diluvialis* and should be sure that other authorized surveyors, such as the state Natural Heritage Programs, have the necessary permit also. It is not necessary for everyone conducting surveys to have a permit, however. Service staff should make sure that all potential surveyors understand the permit requirements and persons without a permit do not take specimens. Service staff should

also encourage all surveyors and partners to notify the Service immediately if it is suspected that a new location of Ute ladies'-tresses orchid has been discovered. There have been problems in the recent past with surveyors waiting several months before notifying the Service or the state Natural Heritage Program. Immediate notification will allow the Service an opportunity to arrange for a person with the proper permit to take a voucher specimen and contact experts to help with identification when the orchid is still fresh and flowering. The Service may need to provide assurances to surveyors that information will be treated as confidential until surveyors have had an opportunity to notify their clients of a discovery. For your information, attachment 3 lists specifications placed on permits issued in 1995.

- **Black-tailed prairie dog**

**BLACK-TAILED PRAIRIE DOG**

**Recommended Protocol**

1. Delineate colonies using a GPS receiver in UTM coordinates and NAD83 datum. First, Identify the prairie dog colony with one GPS fix at the approximate center of the town. Then map the colony perimeter by taking points approximately every 10 meters at the outermost burrows around the colony edge. Document segments of the colony by activity level (high, low, or inactive).
2. Use this table to submit data on prairie dog colony locations. If you have GPS files, guidelines and a data dictionary are available at <http://nris.state.mt.us/mtnhp> (navigate to “animals” and “submit data”).

**Location:** provide as specific location information as possible in UTM coordinates, NAD83 datum. **Township-Range/UTM:** Include township, range, section and  $\frac{1}{4}$  section and UTM's for the approximate center of the colony. **Activity:** defines if the colony is occupied: YES = animals or fresh sign seen, NO = mounds present but neither fresh sign nor animals seen and mounds show various stages of abandonment. UNKNOWN = mounds present but neither fresh sign or animals seen, mounds may or may not show various stages of abandonment OR the survey was not at the time of day and/or season when animals or fresh sign would be expected to be seen. **Size:** If a colony is active, record the acreage of active mounds. Include the acreage of any inactive mounds, if possible. If a colony is inactive or activity is unknown, indicate the acreage of all mounds. If acreage cannot be accurately estimated, place size in one of the following acreage categories; A: 0-5, B: 6-40, C: 41 – 160, D: 161 – 640, E: > 640, or U: unfamiliar with or unable to give acreage estimation. **How size determined:** Indicate how the size was determined, e.g., visual, 7.5-minute map, GPS. **Density:** estimate the number of burrows per acre: Low = less than 5 burrows per acre, Medium = 5 – 10 burrows per acre, High = more than 10 burrows per acre. (An acre is a circle with a diameter of 235 feet, or a square 209 feet to the side.) **Land Ownership:** Indicate ownership, if known. **Comments:** provide any notable information such as shape of colony, landscape features, or adjacent land use. Indicate if any of these associated species are present: Burrowing Owl, Mountain Plover, Ferruginous Hawk, Swift Fox, or Black-footed Ferret.

- **Black Footed Ferret**

## **GUIDELINES FOR BLACK-FOOTED FERRET SURVEYS**

**U.S. Fish and Wildlife Service**

### **SURVEY CRITERIA**

#### Delineation of Survey Areas

Until the time that the Service, States, and other Federal agencies are able to identify reintroduction areas and to classify other areas as being free of ferrets, surveys for black-footed ferrets will usually be recommended. During this interim period the following approach is recommended to determine where surveys are needed.

■ A black-tailed prairie dog (*Cynomys ludovicianus*) town or complex of less than 80 acres having no neighboring prairie dog towns may be developed or treated without a ferret survey. A neighboring prairie dog town is defined as one less than 7 kilometers (4.34 miles) distance from the nearest edge of the town being affected by a project.

■ Black-tailed prairie dog towns or complexes greater than 80 acres but less than 1,000 acres, may be cleared after a survey for black-footed ferrets has been completed, provided that no ferrets or ferret sign have been found.

A white-tailed prairie dog (*Cynomys leucurus*) town or complex of less than 200 acres having no neighboring prairie dog towns may be cleared without a ferret survey. White-tailed prairie dog towns or complexes greater than 200 acres but less than 1,000 acres, may be cleared after completion of a survey for black-footed ferrets provided that no ferrets or their sign were found during the survey.

A complex consists of two or more neighboring prairie dog towns each less than 7 kilometers (4.34) from the other. Instructions for determining a complex of black-tailed or white-tailed prairie dogs are found in Appendix II.

Before any federally funded or permitted activities are conducted on black-tailed or white-tailed prairie dog towns or complexes greater than 1,000 acres, the appropriate Service office should be contacted to determine the status of the area for future black-footed ferret reintroductions (see Appendix I). That office also will determine whether a survey for black-footed ferrets should be completed.

#### Defining a Prairie Dog Town

For the purpose of this document a prairie dog town is defined as a group of prairie dog holes whose density meets or exceeds 20 burrows per hectare (8 burrows/acre). Prairie dog holes need not be active to be counted but they should be recognizable and intact; i.e., not caved in or filled with debris



## Timing of Surveys

The Service recommends that surveys for black-footed ferrets be conducted as close to the initiation of a project construction date as possible but not more than 1 year before the start of a proposed action. This is recommended to minimize the chance that a ferret might move into an area during the period between completion of a survey and the start of a project. If the town being affected is part of a complex in which the combined acreage of prairie dog towns total less than 1,000 acres, a survey of all the prairie dog towns within the complex will serve to clear the entire area provided no black-footed ferrets or their sign are found. If this is done, no future surveys for ferrets will be required within the borders of the complex regardless of future project activities unless a ferret is observed and confirmed on the complex at a later date.

An alternative to clearing all of the complex would be to search only the prairie dog town(s) being affected. Assuming that no ferrets or ferret sign is found, this would allow an activity to take place on the prairie dog town. If an activity is proposed in the same area in the future, a survey for ferrets may again be required if the Service cannot justify an exemption based upon the ferret history in the area, survey records, or current status of prairie dog habitat.

In a prairie dog town or complex where the acres of prairie dog towns meet or exceed 1,000 acres, any prairie dog town being affected should be surveyed as close to the initiation of project activity as possible, but not more than 1 year prior to the proposed action. When other projects are planned that will affect different prairie dog towns within the complex, they too will need to be surveyed before the project starts. Towns or complexes of 1,000 or more acres should be given special consideration for their importance to the overall recovery and survival of the black-footed ferret as potential reintroduction areas. The Service would like to minimize disturbances of these areas until black-footed ferret reintroduction sites have been selected. Once reintroduction sites are selected, these large areas of prairie dogs can be cleared from the need for future surveys if the area is surveyed, no ferrets or ferret sign are found, and it is determined that the area is not needed or suitable for ferret recovery.

## **PROJECT TYPE**

Construction projects - both linear and spatial developments that permanently alter prairie dog towns (buildings, facilities, surface coal mines, transmission lines, major roadways, large pipelines, impoundments, etc.) should be surveyed. The area to be surveyed should include all black-tailed prairie dog towns or complexes greater than 80 acres and white-tailed prairie dog towns or complexes greater than 200 acres occurring on a project right-of-way and the portion of those towns found within one-half mile of the construction site or right-of-way border. Projects of a temporary nature and those that involve only minor disturbance (e.g., fences, some power lines, underground cables, etc.) may be exempted from surveys when project activities are proposed on small prairie dog towns or complexes of less than 1,000 acres, do not impact those areas where ferret sightings have been frequently reported, or occur on areas where no confirmed sightings have been made in the last 10 years. To determine whether a project qualifies for exemption, the lead agency must contact the appropriate Service Office (see Appendix I)

Pesticide or toxicant use - The Service recommends that before any action involving the use of a toxicant in or near a prairie dog town begins, a survey for ferrets should be conducted. This includes all black-tailed prairie dog towns or complexes greater than 80 acres or white-tailed prairie dog towns or complexes greater than 200 acres proposed for control. If phosphide-treated grain, gas cartridges, or tablets are the proposed toxicants and the town proposed for treatment is

in a complex of less than 1,000 acres, the town should be surveyed 30 days or less before treatment using the nocturnal survey technique (see Selection of Survey Method, Method 2). In this situation it is recommended that the entire complex be surveyed and cleared before treatment begins. This would avoid the need for an additional survey if the town needs to be treated again at a later date. Otherwise the town to be treated should be surveyed as described above and surveyed again if a second treatment is needed.

Prairie dog towns or complexes greater than 1,000 acres should not be poisoned without first contacting the appropriate Service office (see Appendix I). Procedures to be followed on large towns or complexes will be the same as for those recommended for construction projects.

If the proposed control agent involves the use of any other compound under registration with the Environmental Protection Agency, then the area to be surveyed for ferrets should include the prairie dog town to be treated and any other town or portion of a town within 1 mile of the town being treated with the toxicant. The survey should be conducted within 30 days or less of the treatment using the nocturnal survey technique. This difference is justified on the basis of potential hazards to ferrets from secondary poisoning. As above, if the town(s) are part of a complex of less than 1,000 acres and the entire complex is surveyed for ferrets, then no future surveys will be required in the affected area if ferrets or their sign are not found.

## **SELECTION OF SURVEY METHOD**

Two methods to survey for black-footed ferrets or their sign are recommended. Either can be used. These methods are based upon the most recent survey research data, and both involve specific time periods. Research has shown a marked decrease in ferret activity and/or sign in November, April, May, and June. For this reason surveys for ferrets during these months are not recommended, since no acceptable confidence can be placed on the results of surveys conducted during this period.

### **METHOD 1**

Diurnal (daylight) surveys for ferrets are recommended if surveys are conducted between December 1 and March 31. This type of survey is used to locate signs left by ferrets. During winter months, ferret scats, prairie dog skulls, and diggings are more abundant because prairie dogs are less active and less likely to disturb or destroy ferret sign. When there is snow cover, both ferret tracks and fresh diggings are more obvious and detectable. Daylight searches or ferret sign, should meet the following criteria to fulfill the minimum standards of these guidelines.

1. Three searches must be made on each town. Each search should be done when fresh snow has been present for at least 24 hours and after 10 or more days have passed between each search period.
2. Vehicles driven at less than 5 miles per hour may be used to search for tracks or ferret diggings, but complete visual inspections of each part of the town being surveyed is required (i.e., visually overlapping transects).
3. If ferret sign is observed, photograph the sign and make drawings and measurements of diggings before contacting the appropriate Service office (see Appendix I) and State Wildlife Agency.

Aerial surveys for ferrets are considered experimental, but may be allowed in winter using skilled aerial observers when suitable snow conditions exist. Determination of when to use this technique should be made with the appropriate Service office (see Appendix I).

## **METHOD 2**

Nocturnal (nighttime) surveys involve the use of spotlighting techniques for locating ferrets. This survey method is designed to locate ferrets when the maximum population and the longest periods of ferret activity are expected to occur.

Minimum standards have been established by the Service for nocturnal surveys, these should be followed as recommended and include:

1. Surveys should be conducted between, July 1 and October 31.
2. The prairie dog town should be continuously surveyed using spotlights. Surveys should begin at dusk and continue until dawn on each of at least three consecutive nights. Large prairie dog colonies should be divided into tracts of 320 acres and each tract systematically searched throughout three consecutive nights. Rough uneven terrain and tall dense vegetation may require smaller tracts to result in effective coverage of a town.
3. Observations on each prairie dog town or tract searched should begin a different starting point on each successive night to maximize the chance of overlapping the black-footed ferrets' nighttime activity period(s).
4. A survey crew consists of one vehicle and two observers equipped with two 200,000 to 300,000 candle power spotlights. In terrain not suitable for vehicles, a crew will consist of two individuals working on foot with battery-powered 200,000 to 300,000 candle power spotlights. To estimate the number of crew nights for a survey, divide the total area (acres) of prairie dog town to be surveyed by 320/acres and multiply by 3. One or both of the observers in each survey crew should be a biologist trained in ferret search techniques.

### Survey Reports

The following outline provides a general summary of the types of information useful to the Service in reviewing the results of ferret surveys for concurrence with an agency's decision of "may affect" or "no affect." This information will be used to assist in Section 7 compliance decisions. Headings listed can be used in field data forms to ensure that all pertinent data are collected and surveys are not unnecessarily repeated. It is recommended that a report summarizing survey data be prepared for each project and submitted to the lead agency and to the appropriate Service office (see Appendix I).

Data requirements for daylight searches (December 1 to March 31) or night searches (July 1 to October 31) are as follows:

1. Date
2. Hours spent searching (record time started - time stopped)
3. Acres searched
4. Number of colonies searched

5. Number of burrows inspected
6. Ferrets or ferret sign observed and locations
7. Photos taken
8. Names, address(es), telephone numbers and qualifications of searchers
9. Weather conditions (ground condition bare or snow covered)
10. Method used to search (backpack spotlight, vehicle, walking)
11. Mapped survey route and location of prairie dog town

#### Survey Summary

1. Starting and completion dates for the survey
2. Total hours of spotlight search
3. Total acres searched by spotlight
4. Total colonies searched using spotlight
5. Total ferrets observed and locations by night search
6. Total hours searched in daylight
7. Total acres searched in daylight
8. Total colonies searched in daylight
9. Total ferret sign observed and location of sign observed
10. Narrative describing search technique used
11. Mapped location of central project (include acres and description)
12. Copies of field data sheets

#### Surveyor Qualifications

The Service has established a process to provide specific training for conducting ferret surveys. This formal training (a 1-day workshop for biologists) is currently available through the Wyoming Cooperative Fishery and Wildlife Research Unit, Box 3166, University Station, Laramie, Wyoming 82071, telephone (307) 766-5415. A trained biologist should accompany each survey crew; i.e., one trained biologist in each two person crew, when surveys are being conducted.

A field guide "Handbook of Methods for Locating Black-footed Ferrets" provides detailed methods for locating black-footed ferrets and interpreting sign made by this animal under field conditions. This handbook should be useful when designing surveys for black-footed ferrets, whether for Section 7 compliance or for locating ferrets for conservation and recovery. A copy of this document may be obtained from:

Bureau of Land Management  
Wyoming State Office  
P.O. Box 1828  
Cheyenne, Wyoming 82001

Bureau of Land Management  
Montana State Office  
P.O. Box 36800  
Billings, Montana 59107

### **COORDINATION OF SURVEYS**

This section discusses coordination measures that the Service believes are vital to completing a proper survey.

### State Wildlife Agency

The appropriate State wildlife agency should be contacted prior to initiating ferret surveys. State agency personnel may provide historical information or literature pertinent to the survey or offer suggestions regarding access or landowner contacts needed for the survey. In addition, some States may require special permits for spotlighting wildlife or have minimum requirements for protecting ferrets under State laws which are different or more detailed than those described in these guidelines.

### Other Local Authorities

We recommend that persons planning surveys contact local authorities before initiating surveys. Many sheriff departments cooperate with State conservation officers in investigating possible game violations. Spotlighting crews are often reported to the game warden and sheriff by local citizens and ranchers. Proper coordination of survey activities should prevent unnecessary conflict with these groups and agencies.

### **PROCEDURES TO FOLLOW IF FERRET SIGN OR A FERRET IS LOCATED**

Wildlife agencies of some States located within the potential range of the black-footed ferret have developed a procedure to follow when ferrets are seen and reported. We recommend that agencies or their representatives request these procedures from the States in which they are working and review them before conducting surveys. If no procedures are available, contact the appropriate Service office (see Appendix I) for guidance. If you observe a ferret while conducting surveys, you should notify the closest Service or State wildlife agency office within 24 hours.

Experience has shown that premature release of a ferret sighting to the news media or others can have lasting negative effects upon recovery actions in the area. We request that contacts with the public be avoided until the presence of a ferret is confirmed by the Service or State wildlife agency and necessary landowner contacts and discussions are completed.

### Appendix I

A set of rules for circumscribing a prairie dog complex has been developed by "Biggins, D., B. Houston, B. Miller, B. Oakleaf, T. Clark and A. Dood. 1988. A system for evaluating black-footed ferret habitat. U.S. Fish and Wildlife Service Draft Report, 40 p. plus appendix." This method provides a practical and reasonably straightforward procedure for circumscribing a complex of prairie dogs.

To determine the acreage that a prairie dog town or complex of towns occupy, several steps are required. A diagrammatic example of a simulated complex is presented here. Before starting this exercise, those prairie dog towns that will be affected by the action and those in the surrounding area should be identified on a map having a scale of 1:24,000. Once this has been done, the following procedures should be followed:

1. Determine the northernmost prairie dog town on the map. Start at the northernmost point of the northernmost town of the complex being considered.

2. Pivot a 7-km (4.34 mile) line segment clockwise from due north until it touches a point on a town (see example). The line between the initial point and the second point forms the first segment of the polygon.
3. From the second point, pivot the 7-km line clockwise from alignment with the first segment until it touches a third point on a town. This forms the second segment of the polygon.
4. If a convex town perimeter prevents "pivoting" the 7-km line to another point, move clockwise around that perimeter until Step 3 can be accomplished. The convex perimeter of a town can thus become a segment of the boundary of the complex.
5. Continue pivoting the line from town to town until the polygon becomes closed.
6. In rare circumstances, a complex may contain one or more large prairie dog-free spaces (diameter = 7 km). Delete this space from the area of the complex, circumscribing it as follows.
  - a. Start at the southernmost point of the northernmost town in the prairie dog-free space.
  - b. Pivot a 7-km long line counter-clockwise from due south until it touches a point on a town.
  - c. If a concave town perimeter prevents the "pivoting" 7-km line from contacting another point, move counter-clockwise around that perimeter until (b) can be accomplished.
  - d. Repeat step (b) until the polygon becomes closed.

## • Sensitive Species

BLM sensitive species and other incidental wildlife observations should be recorded. The Newcastle Sensitive Species list documents the complete list of sensitive species for the BLM that may occur in the Newcastle Field Office. Additional surveys for these species may also be required by the land management agency. If no formal surveys are required the following minimum data should be collected:

Species

Sex

Number

Date

Time

UTM Coordinates, datum

Township

Range

Section

QTR/QTR

Weather

Photographs

Activity

Habitat Description

Nest or other breeding activity